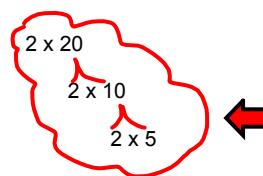


3.6 Common Factors

Factor the number 40.

$$40 = \underline{2 \times 2 \times 2 \times 5}$$



What does it mean to factor?

Represent as a product of prime factors.

1. Using a Model (e.g., alge-tiles)

Model the expression as an area. The lengths of the sides are factors.

Some factors can be reduced further. Repeat this process until no factors can be reduced.

Factor: $3x^2 + 2x$

$$3x^2 + 2x$$

$$= x(3x + 2)$$

Factor: $2x^2 + 4x$

$2x(x+2)$

2. Factor Algebraically

Look for the Greatest Common Factor of the coefficients and the GCF of the variables.

Ex.1 Factor: $8x^3 - 6x^2y^2 + 4x^2y$

The GCF of 8, 6, and 4 is 2.

The GCF of x^3 , x^2y^2 , and x^2y is x^2 .

$$8x^3 - 6x^2y^2 + 4x^2y = 2x^2(4x - 3y^2 + 2y)$$

= _____

$$\frac{x^2}{x^2} = 1$$

3. Factoring by Grouping

Some polynomials do not have common factors in all terms. They can sometimes be factored by grouping terms with common factors.

Ex.2 Factor: $ac + bc + ad + bd$

$$c(a+b) + d(a+b)$$

$$(c+d)(a+b)$$

Factor

a) $5x + 25$

$$= 5(x + 5)$$

b) $24xy^2 + 16x^2y$

$$24xy^2 + 16x^2y$$

$$8xy(3y + 2x)$$

c) $5x(a+b) + 3(a+b)$

$$= (5x+3)(a+b)$$

d) $3t(x+y) - (x+y)$

$$(3t-1)(x+y)$$

e) $m^2 - 4n + 4m - mn$

$$= m^2 + 4m - 4n - mn$$

$$= m(m+4) - n(4+m)$$

$$= m(m+4) - n(m+4)$$

$$(m-n)(m+4)$$

f) $5m^2t - 10m^2 + t^2 - 2t$

$$5m^2(t-2) + t(t-2)$$

$$(5m^2+t)(t-2)$$

Factor

g) $3y^2 - 9y - 20$

h) $3m^3n^2 + 18m^2n^3 - 12mn^2$

i) $4t(m+7) + (m+7)$

j) $4y(p+q) + x(-p-q)$

k) $3t(x-y) - (x+y)$

Assigned Work:

p.202-203 # 1, 3bd, 5bc, 6def, 7, 8, 9, 10